



Hoof Supplements for Horses

Oral supplements might be indicated for horses with dry, cracked, or brittle hooves

Overview

Dietary supplements, commonly referred to as nutraceuticals, are products taken orally that contain one or more ingredients intended to supplement the diet, such as vitamins, minerals, herbs or other botanicals, amino acids, enzymes, organ tissues, glandulars, or metabolites. Of the large amount of supplements available for horses, hoof supplements are among the most popular. According to a 2008 market survey,¹ 10% of all horse supplements sold in the U.S. are for the hoof.

Hoof supplements are indicated for horses with dry, cracked, or brittle hooves and/or chronically sore feet, particularly those unable to hold shoes.^{2,3}

Typical hoof supplement ingredients thought to benefit hoof growth include biotin, methionine, zinc or zinc methionine, sulfur, a variety of vitamins and minerals, yeast or yeast extracts, amino acids, omega-3 fatty acids, and probiotics such as *Lactobacillus acidophilus*.

Hoof Structure and Growth

The hoof is a modified form of skin comprised of four parts: the wall, periople, frog, and sole. The wall of the hoof grows from the coronary band down toward the ground, sliding over the underlying tissues covering the coffin bone and hoof cartilages and ultimately wearing away against the ground.

For this reason, damaged hoof tissues, cracks, grooves, etc., cannot simply heal. Instead, the damaged tissue must be grown out and replaced with new, healthy hoof wall. Since the average hoof grows at a rate of 6-15 mm/month (the actual rate of growth varies by age, breed, and use), it takes approximately one year before the entire hoof has been replaced with new hoof tissue.

This explains, at least in part, why hoof problems can be so frustrating for owners, farriers, and veterinarians alike.



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How Do Hoof Supplements Work?

In general, hoof supplements, like any nutritional supplement, are believed to provide one or more dietary substances thought to be lacking from the horse's regular diet. Most, if not all, of the most popular hoof supplements contain biotin—a water-soluble B vitamin discovered in the 1930s. Subsequent to humans claiming that biotin improved nail and skin quality, biotin was fed to horses hoping for the same response.³

Biotin is an essential nutrient, meaning it must be obtained in the diet. Important sources of biotin in horses are forage (e.g., alfalfa, oats, barley, soybean meal), and some is produced by specific microbes that live in the large intestine and are absorbed by the horse. Few studies have been performed in horses that specifically evaluate the efficacy of biotin. Based on the available research, current recommendations are to administer 20 mg of biotin per day for a minimum of 8-12 months.

Methionine, another common ingredient

in hoof supplements, is a sulfur-containing amino acid that cannot be produced by the body and therefore must be obtained from the diet. Sulfur-containing amino acids are thought to be important for the formation of cross-linkages in the hoof tissues that ultimately make the hoof strong and resilient. Similarly, providing sulfur (e.g., as a mineral, dimethylsulfoxide, or methylsulfonylmethane) and zinc (e.g., as a mineral or zinc methionine) in the diet is thought to contribute to improving the "strength" of the hoof. Optimum doses and efficacy of these and other ingredients have not been established.

Other ingredients such as amino acids (e.g., lysine), proteins, collagen, and fatty acids are also commonly included in hoof supplements in an attempt to promote strong, healthy hoof growth. The mechanisms of action of these ingredients remain unclear.

All horses in all life stages are susceptible to nutritional deficiencies and subsequent deleterious effects. Early and late life stages (foals and seniors) are particularly important

times in a horse's life to ensure all nutrient requirements are being met.

Do Hoof Supplements Work?

Based on the sheer popularity of oral nutritional supplements, the question of whether or not hoof supplements are effective or not is almost moot. Owners and trainers perceive they are effective and will continue to use them.

In terms of an evidence-based approach, there is currently insufficient scientific data to answer this question. Only a small number of studies have been published and conflicting results exist.

In 1998, for example, a group of Scottish scientists from the Royal (Dick) School of Veterinary Studies at The University of Edinburgh examined four pairs of ponies that were apparently healthy and void of hoof capsular defects. The four ponies in the treatment group were fed 0.12 mg/kg of biotin—equivalent to approximately 60 mg of biotin per horse per day. After five months of biotin supplementation, the scientists observed a 15% increase in the treated ponies' hoof growth rates. The hoof capsule grew 35.34 mm in treated ponies compared to

only 30.69 mm in the control group.⁴

Studies demonstrated that biotin remedied defects in the structure and horn of the hoof (Kempson, 1987) and in cases of disturbed horn elasticity (Wintzer, 1986).

The ingredients included in hoof supplements are generally regarded as safe. Nonetheless, equine nutrition experts suggest that in addition to administering oral hoof supplements to horses with "bad feet," that owners embrace a multi-modal approach to foot care that includes regular trimming and shoeing by a professional farrier.

Supplement Horses Wisely

To select a quality hoof supplement, owners can rapidly peruse a product label using the ACCLAIM system.⁵

Alternatively, consumers can look for products with the National Animal Supplement Council's (NASC) stamp of approval. NASC is a self-regulatory group that promotes the "health and well-being of non-human food chain animals that are given animal-health supplements by their owners, and to protect and enhance the integrity of the animal-health product industry."⁶

Since all nutrients must be consumed in

balance, examine each item fed to a horse to determine the total amount of each oral supplement or ingredient that the horse is receiving.

More information on equine nutrition is available from the National Research Council.⁷

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